

CLAIMS

1. An electro-chemical sensor comprising
at least two redox systems sensitive to the same species.
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2. The sensor of claim 1 wherein the species are protons.
3. The sensor of claim 1 wherein the at least two redox systems
have a maximum or peak redox reaction at different voltages.
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4. The sensor of claim 1 wherein the at least two redox systems
are mounted onto the same conductive substrate.
5. The sensor of claim 4 wherein the at least two redox systems
15 are mounted onto a carbon-based substrate.
6. The sensor of claim 5 wherein the at least two redox systems
are mounted onto a carbon powder substrate.
- 20 7. The sensor of claim 5 wherein the at least two redox systems
are mounted onto a diamond-based substrate.
8. The sensor of claim 7 wherein the at least two redox systems
are mounted onto a multi-walled nanotube-based substrate.
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9. The sensor of claim 1 comprising a detector adapted to
measure the redox potential of said at least two redox
system in the presence of the species and to convert
measurements into an signal indicative of the concentration
30 of said species.
10. An electro-chemical sensor for determining the concentration
of a molecular species in a fluid comprising a first
redox system sensitive to said species and a second
35 redox system sensitive to said species;
voltage supply and electric current detector to perform
voltammogrammic measurements;

and an analyser to detect relative shifts in said voltammogramic measurements.

11. A downhole tool for measuring characteristic parameters of
5 wellbore effluents comprising an electro-chemical sensor in
accordance with claim 1.
12. A downhole formation sampling tool for measuring
characteristic parameters of wellbore effluents comprising
10 an electro-chemical sensor in accordance with claim 1.
13. A downhole tool for measuring characteristic parameters of
wellbore effluents comprising an electro-chemical sensor in
accordance with claim 1 mounted onto a permanently installed
15 part of the wellbore.